```
data ex2018_2_10_1;
   input species $ gender $ amino@@; output;
datalines;
m1 m 21.5 m1 m 19.6 m1 m 20.9 m1 m 22.8 m1 f 14.8 m1 f 15.6 m1 f
13.5 m1 f 16.4
m2 m 14.5 m2 m 17.4 m2 m 15.0 m2 m 17.8 m2 f 12.1 m2 f 11.4 m2 f
12.7 m2 f 14.5
m3 m 16.0 m3 m 20.3 m3 m 18.5 m3 m 19.3 m3 f 14.4 m3 f 14.7 m3 f
13.8 m3 f 12.0
;

proc glm;
 class species;
 model amino=species;
 means species/ hovtest=bartlett welch;
run;

ods graphics on;
proc glm data=ex2018_2_10_1 plot=diagnostics;
   class species;
   model amino = species;
run;
ods graphics off;

proc glm;
 class species gender;
 model amino=gender species;
 means species/snk scheffe;
run;

ods graphics on;
proc glm data=ex2018_2_10_1 plot=diagnostics;
   class species gender;
   model amino = species gender;
run;
ods graphics off;
```

```
data ex2018_2_10;
do species='m1', 'm2', 'm3';
do gender='male', 'female';
do k=1 to 4;
   input amino@@; output;
   end; end; end;
datalines;
21.5 19.6 20.9 22.8 14.8 15.6 13.5 16.4
14.5 17.4 15.0 17.8 12.1 11.4 12.7 14.5
16.0 20.3 18.5 19.3 14.4 14.7 13.8 12.0
;
proc glm;
 class species gender;
 model amino=species gender species*gender;
run;
proc glm;
 class species gender;
 model amino=species gender;
run;
proc glm;
 class species gender;
 model amino=gender species;
 means species/ tukey duncan;
run;
```

```
data ex3_1;
 input drug $ result $ count;
 datalines;
 aspirin my_y 139
 aspirin my_n 10898
 placebo my_y 239
 placebo my_n 10795
 ;
proc freq;
 tables drug*result/chisq measures;
 weight count;
run;

data ex3_2;
 input drug $ result $ count;
 datalines;
 yes my_y 73
 yes my_n 18
 no my_y 141
 no my_n 196
 ;
proc freq;
 tables drug*result/chisq measures;
 weight count;
run;
data ex3_2_1;
 input drug $ result $ count;
 datalines;
 drug m_d 73
 drug m_n 18
 no m_d 141
 no m_n 196
 ;
proc freq;
 tables drug*result/chisq measures;
 weight count;
run;
```

```
data ex3_5;
 input before $ after $ count;
 datalines;
 sat sat 23
 sat uns 7
 uns sat 18
 uns uns 12
 ;
proc freq;
 tables before*after/chisq agree;
 weight count;
run;

DATA ex3_6;
INPUT hospital $ trt $ recovery $ count @@;
CARDS;
A old yes 9 A old no 5
A new yes 11 A new no 6
B old yes 7 B old no 5
B new yes 8 B new no 3
C old yes 4 C old no 6
C new yes 7 C new no 5
D old yes 18 D old no 11
D new yes 26 D new no 4
;
PROC FREQ;
WEIGHT count;
TABLES trt*recovery/chisq;
RUN;
PROC FREQ;
WEIGHT count;
TABLES hospital*trt*recovery/CMH NOROW NOCOL;
RUN;
PROC FREQ;
WEIGHT count;
TABLES hospital*trt*recovery/CMH1 NOROW NOCOL;
RUN;
```